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ABSTRACTS ON LIGHTING & WIRING



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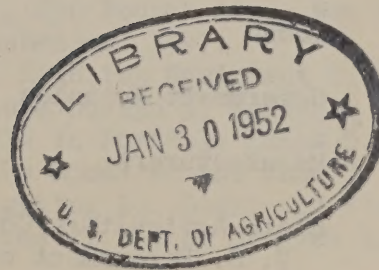
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ABSTRACTS ON LIGHTING AND WIRING

PREFACE

This publication has been prepared to assist workers engaged in the application of electricity to the farm and home to become acquainted with useful technical data and information on lighting and wiring. The abstracts of the literature contained herein constitute a partial list of the publications in the files of the Technical Standards Division on these subjects. Undoubtedly others are available from various sources. Some of the publications abstracted may no longer be available for distribution. However, college libraries, should have most of them in their files. Much of the literature included under the heading "Associations", "Books", "Manufacturers", and others can be obtained by writing to them at the address shown.



U. S. Department of Agriculture
✓ U. S. Rural Electrification Administration
Technical Standards Division
x ✓ Electro-Agriculture Section
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PART I - LIGHTING

Associations

District of Columbia - National Education Association of the United States,
1201 16th. St. N. W., Washington 6.

1. Teaching handbook, Teaching about Light and Sight. April 1946.
Sight; the normal human eye; defective sight; causes of defective sight; common eye defects; school program for eye welfare; factors in seeing; wiring; natural light; artificial light sources; measurement of light; good lighting; lighting fixtures; incandescent and fluorescent lamps; light in the home as natural light, artificial light; classroom lighting and levels of illumination, visual tasks, school surroundings, maintenance of good lighting conditions, classroom practices in the control of light; teaching light and sight as general objectives and activities, suggested curriculum topics, methods and devices, specific activities, selected bibliography; selected list of periodicals; agencies supplying information and materials. Price 30¢.

Books

New Jersey - Westinghouse Electric Corp., Commerical Engineering Dept.,
Lamp Division, Bloomfield.

1. Lighting Handbook. June 1947.
Chapters on 1. The Eye and Vision 2. Light Characteristics and Measurements 3. Light Sources 4. Introduction to Lighting Design 5. Illumination Levels 6. Interior Lighting Design 7. Interior Wiring for Lighting 8. Store, Office, School and Public Building 9. Industrial Lighting 10. Architectural Lighting 11. Floodlighting Design 12. Street Lighting 13. Aerodrome and Airway Lighting 14. Sign Lighting 15. The Cost of Lighting. Price \$1.00.

New York - D. Van Nostrand Company, Inc., 250 Fourth Ave., New York City.

1. Residential Lighting by Myrtle Fahsbender. 1947.
Contains Chapters on 1. Residential Lighting Equipment 2. The Influence of Period Styling on Lighting Fixture Design 3. Portable Lamps and Lamp Shades 4. Designs and Materials in Portable Lamps 5. Fluorescent Lighting in the Home 6. Lighting the Rooms of the Home 7. Home Wiring 8. Garden Lighting 9. Christmas Lighting 10. Light and Vision 11. Electrical and Illumination Terms 12. Light Sources 13. Color and Light in the Home.
2. Light, Vision and Seeing by Matthew Luckiesh. 1944.
A simplified presentation of their relationships and their importance in human efficiency and welfare. Contains chapters on 1. This Changing World 2. Appalling Prevalance of Eye-Defects 3. Light and Sight 4. Milestones of Lighting Progress 5. What Makes Things Visible 6. Brightness is Omnipotent 7. The Role of Size 8. The Importance of Brightness Contrast 9. It Takes Time to See 10. Visual Acuity 11. Test-charts and their Limitations 12. Meaning and Measurement of Visibility 13. Ease of Seeing 14. Brightness Engineering 15. Light and Color 16. Efficiency, Safety and Easy Seeing 17. One Hundred Questions.

Books (Cont'd)

Wisconsin - The Bruce Publishing Company, Milwaukee.

1. Rural Electrification by J. P. Schaenzer, Fourth Revised Edition. 1948 Pp. 1-103, 202, 285. Contains chapters on Electricity, the Silent Partner, How Electricity is Made and Distributed, Serving the Farmer, Wiring Materials, Wiring Maintenance and Repair, Wiring the Farmstead, Wiring the Home, the Barn and Outbuildings, Lights and Lighting, Poultry House Lighting. Also light for plant growth and many other applications of electricity on the farm and in the home. Price \$3.75.

Government Agencies

District of Columbia - Federal Security Agency, U. S. Office of Education, Washington.

1. Pamphlet No. 104, Lighting Schoolrooms by R. L. Hamon. Definitions of terms; brightness balance; room finishes and reflectance; fenestration or location of windows or other sources of natural light; illumination, kind and amounts, references.

Laboratories

Illinois - RIM Standards Institute, Inc., 307 N. Michigan Ave., Chicago 1, Illinois.

1. Standard Specifications for Industrial Lighting Units. Gives a brief history of the institute, its objectives, purpose, procedure and certification and testing; testing and inspection procedure for maintenance of label service; RIM dome reflectors: RIM deep bowl reflectors; symmetrical angle reflectors; 48" fluorescent two-lamp closed end porcelain enamel unit and three-lamp unit; 60" fluorescent two-lamp closed end porcelain enamel unit; 48" fluorescent two-lamp open end porcelain enamel unit and three-lamp unit; 60" fluorescent two-lamp open end unit; RIM glassteel diffusers; 300-1500 watt aluminum reflectors for concentrating distribution; for medium spread distribution; 48" fluorescent two-lamp closed end porcelain enamel unit with longitudinal shield and two-lamp open end unit.

New York - Boyce Thompson Institute, 1086 North Broadway, Yonkers, New York.

1. Reprint from Vol. 11, No. 2., Intermittent Light and Flowering of Gladiolus and Carnation by J. M. Arthur and E. K. Harvill Jan.-Mar. 1940. Lighting circuits; results with gladiolus; intermittent as compared with continuous mazda lighting; new corn production and day length; carnations and intermittent light.

Laboratories (Cont'd)

2. Reprint from Vol. 10, No. 1., Heating and Lighting Greenhouses with Intermittent Light by J. M. Arthur and E. K. Harvill. 1938.
Insulated greenhouses (see earlier publication); ordinary type greenhouse, lighted and partially heated by lamps; period and amount of illumination each day; temperature; methods of timing intermittency of lamps; results with lighting frequency timed by clock mechanisms and thermostatic action; carbon dioxide supply.
3. Reprint from Vol. 8, No. 5., Plant Growth Under Continuous Illumination from Sodium Vapor Lamps Supplemented by Mercury Arc Lamps by J. M. Arthur and E. K. Harvill. 1937.
Describes light sources; methods and results; plants include begonia, gardenia, cotton, geranium, buckwheat, snapdragon and tomatoes.
4. Reprint from Vol. 7, No. 2., A New Type of Insulated Greenhouse Heated and Lighted by Mazda Lamps by J. M. Arthur and L. C. Porter. 1935.
Construction of greenhouse; plants grown; temperature control and thermostat operation; cost of operation; cost of construction; voltage of lamps used; method of increasing carbon dioxide concentration; results.

New York - Electrical Testing Laboratories, Inc., 2 East End Ave.,
New York 21.

1. The Application of the Fluorescent Lamp to Portable Lamps.
Fluorescent lamp circuits; location of circuit parts and effect on operation; requirements for satisfactory operation with portable lamps and means of complying; radio interference elimination; light output of commonly used lamps.

Magazines

Pennsylvania - The Curtis Publishing Company, Philadelphia 5.

1. Farmstead Light Bulb Inventory March 1945.
Summary of survey made through members of Country Gentlewomen League Clubs; gives total bulbs, average per farm, variations by geographical division, location and type of bulbs in home or on farm, table and floor lamp inventory, use of fluorescent, replacement bulbs, length of electric service, rooms in farmhouse, farm acres, source of farm income, number of livestock on hand.

Manufacturers

New Jersey - Westinghouse Electric Corp., Lamp Division, Bloomfield.

1. Reprint from, "Parent's Magazine", Proper Lighting for Tele-Viewing by Myrtle Fahsbender. March 1951.
Problems are discussed and correction methods are recommended.
2. Bulletin A-4759, Fluorescent Lamps. February 1951
Fluorescent lighting; fluorescence; how the lamp works; reference data; auxiliary equipment; operating characteristics of lamps and auxiliaries; lamp life; lumen maintenance; voltage; coolness; temperature, humidity and lamp starting; color and quality; brightness; stroboscopic effect; D-C operation; A-C frequency; power factor; radio interference; noise; vibration.
3. Reprint from, "Better Light Better Sight News", Vol. 18, No. 2, Stitch in the Dark - Miss the Mark by Myrtle Fahsbender and Priscilla Presbrey. October 1950.
The task and the problem; equipment tested; machine lights; fluorescent lights; performance of test luminaires.
4. Bulletin A-4854, Illumination Design Data for Interiors. March 1950.
Lumen method of calculation; diffuse reflection values for various colors and finishes; room index; utilization coefficients; lamp data; point by point method for calculating footcandle values.
5. Reprint from "Farm Journal", Re-lighting a Farm Home by Edith Buchholtz. January 1950.
Cites a farm home as example; shows lighting before and after re-lighting and improvements; chart showing lighting fixture cost.
6. Good Light is "Sew" Easy on the Eyes by Myrtle Fahsbender and Priscilla Presbrey. September 1949.
Reflectance of various fabrics; test procedures; performance of test luminaires.
7. Reprint from "Illuminating Engineering", Adapters Remodel Home Lighting by Edith L. Buchholtz. June 1949.
Explains and shows photographs of the application of various adapters before and after use.
8. Reprint from "Illuminating Engineering", Vol. XLIII, No.10, Performance Analysis of Available Lighting for Reading in Bed by Myrtle Fahsbender and Priscilla Presbrey. December 1948.
Preliminary observations; test room; test procedure; room illumination source brightness as seen from reading plane; wall and luminaire brightness; mounting position; photographs of each test.
9. Bulletin Number 1, "Know How" Lighting Series, The Fluorescent Lamp - What it is, Construction, Operation, Advantages. April 1948.
What is a fluorescent lamp, with wiring diagrams and illustrations; also discusses auxiliary equipment.

Manufacturers (Cont'd)

10. Front Row Vision for Schools by W. H. Kahler and J. J. Neidhart. July 47.
Brightness distribution, illustrates various types of systems and gives summary of brightness ratios for each system; ceiling-mounted vs. suspension-mounted fluorescent luminaires; two-row system vs. three-row.
11. Bulletin No. 2., "Know How" Lighting Series, The Incandescent Lamp, a Digest of Facts and Data. April 1947.
Whats an incandescent lamp; elements of lamp; how lamp works; lamp bases; bulb shapes and finishes; lamp life; special lamps; good lighting; lighting levels; what bulb to use and where; see-ability.
12. Reprint from "Westinghouse Engineer", Fighting Bacteria with Ultraviolet. February 1942.
Explains radiation types; research methods; resistance of bacteria and age; describes the "Sterilamp"; viruses; applications of ultraviolet; ultraviolet in hospitals.
13. Reprint from "Food Industries", Ultraviolet Finds New Applications by T. R. Porter. July 1940.
Describes use of bactericidal radiation in the meat, baking, dairy, fish and fresh fruit and vegetable industries.
14. Reprint from "The Electrical Journal", Life, Death and Short-Wave Radiation by S. G. Hibben. April 1938.
Explanation of short-wave radiation; terminology; reddening of skin and sun tan; production of ozone and nitrous oxide; radiations divided into four regions; explains and describes the "Sterilamp"; time requirements to kill organisms; applications.
15. Mimeograph A-32495, More Chickens Quicker With Short Wave Ultraviolet.
One year study in 400 hatcheries and feeding stations; chick mortality; growth of birds; overcrowding of facilities; disinfection of air; better feathering, improved condition of legs and comb, less cannibalism.
16. The Recipe Calls for Lighting by Myrtle Fahsbender.
General kitchen lighting; local kitchen lighting; lighting the sink, range and counters; mixing your lighting; photographs and illustrations of various types of luminaires which can be used.
17. See "Wiring" for further information.

Ohio - General Electric Company, Nela Park, Cleveland.

1. Bulletin LD-10, Lighting for Sports and Recreation by K. M. Reid and A. F. Nies. April 1949.
Community recreation centers; outdoor applications; operation and care of lighting equipment; floodlighting tables; table of lamp lumens; indoor applications.

Manufacturers (Cont'd)

2. Bulletin LD-2, Fundamentals of Light and Lighting by Walter Sturrock and K. A. Staley. January 1949.
Explains light and radiant energy; how we see; measurement of illumination; candlepower distribution curves; lamp efficiency; brightness; photometric laboratory measurements; photocell; spectral energy; ultraviolet reflectance; field measurement of illumination and brightness; light meter; light control by reflection, transmission, refraction, diffusion, absorption, polarization; light and color; color systems; color mixture nomograph; quality and quantity of illumination; design of lighting systems; room indexes; illumination calculation methods; glossary of terms.
3. Reprint from "Progressive Architecture", Classroom Lighting Techniques by C. J. Allen. August 1948.
Incandescent lighting; fluorescent lighting; various types of installations; louverall systems; the cost of lighting.
4. Bulletin LD-17, Circline Fluorescent Lamps. January 1948.
Accessory equipment; lampholders; ballasts; radio interference; design suggestions; circuit diagrams.
5. B-4159, How to Apply Lighting on the Farm. 1948.
Value of efficient lighting; amount of light; quality of light; color of light; types of luminaires; lighting control; farm lighting selection chart.
6. Reprint from "The Magazine of Light", Vol. 17, No. 2, Seven Steps to Seeing Comfort, by R. L. Oetting. 1948.
Discusses window glare; light desk tops; lighten walls and ceilings; raise reflectance; lighten floors; lighten woodwork or trim; use good lighting; suggested reflectance values.
7. Reprint from "General Electric Review", Vol. 50, No. 8, Glare Factors and Their Significance by Ward Harrison and Phelps Meaker. August 1947.
Glare factor conditions; glare factor for various lighting installations; glare factor defined; desirable glare-factor value.
8. LD-11, Germicidal Air Disinfection, Selection, Installation and Operation of Fixtures by L. J. Buttolph. February 1947.
Air disinfection methods; upper air irradiation; air circulation and fans; caution, plants and children; fixtures, placement and numbers; caution-low or reflective ceilings; installation tables; operation maintenance; ozone; hospital floor and air irradiation; portable room irradiation; elevators and service rooms; sanitary ventilation and low occupancy; duct installation methods; air circulation; duct dimensions and lamps; visual appraisal of fixtures; effectiveness and safety; basic data; maximum face exposures; basic fixture reflector.

Manufacturers (Cont'd)

9. Reprint of paper before IES, Studies of Illumination and Brightness in Residential Interiors by E. W. Commery. September 1946.
Analysis of illumination values for visual application and associated brightness values for all parts of the interior where the visual applications will take place; brightness-contrast ratings of some modern portable lamps.
10. Bulletin LD-14, Germicidal Protection and Disinfection by L. J. Buttolph. September 1946.
Deals with liquids and solid surfaces; technical data on GE germicidal lamps; equipment needed; sanitary storage; drinking glass sanitation; domestic refrigeration; meat storage; processing and packaging; bakeries; mold prevention; cheese, wine and beer; odor reduction; bottle caps; insects; granulated materials; sugar; fruits, nuts and vegetables; liquids, disinfection, absorption, effective intensity distance, design of devices for accessories, operation and maintenance; milk disinfection; athletes foot, scalp and skin; shoes and hats; bathroom sanitation; paper and textile mills; cellars, closets, libraries; miscellaneous; protection of eyes; depreciation of lamps and life; germicidal effectiveness; basic germicidal technical data.
11. Reprint of paper of IES, An Artificial Sunshine Solarium by G. F. Prideaux. September 1946.
Solar energy curve at sea level and other data regarding solar radiations; spectral distribution of energy from lamp types R-40 reflector spotlight, A-H9 mercury and 3500 K white fluorescent, RS-sunlamp; describes the solarium at Nela Park, Ohio with pictures and cross sectional view and gives lamp load for this installation.
12. Bulletin LD-15, Germicidal Fixtures, Basic Design and Use by L. J. Buttolph and Howard Haynes. July 1946.
Basic shapes for wall mounting; design objectives; upper and lower air disinfection; energy distribution; fixture efficiency; installation effectiveness; graphic appraisal for installation; experimental fixture design; low and reflective ceilings; low beam angle and ceiling reflectivity; louvers and enclosure; spatial distribution; louvered reflector and enclosure; installation tables; vertical use; adjustable elements; appearance and convenience; reflectivity; mounting; electrical parts; direct current; caution notices; patents; design assistance; basic technical data; tube dimensions and characteristics.
13. LD-13, Sunlamp, Infrared Lamps, Germicidal Lamps in the Poultry Field by L. C. Porter, J. E. Davenport and J. P. Ditchman. May 1946.
What is ultraviolet; near, middle and far ultraviolet; how ultraviolet affects health; sunlamp supplement cod liver oil; advantages of sunlamps; benefits of ultraviolet; methods of use; installation of sunlamp; cleaning of sunlamps; battery brooders; cost of operation; baby chicks; germicidal lamps; cautions; baby chick pens; chick brooders; laying houses; egg candling and poultry dressing rooms; incubators and hatchers; maintenance; vitamin D potency of germicidal radiation; infrared lamps.

Manufacturers (Cont'd)

14. Bulletin IS-103, Mercury Lamps - Operating Characteristics and Applications by C. E. Weitz and C. L. Amick. May 1946.
Describes and gives specification and operating data for G-E mercury lamp types, sunlamps, black light lamps, general lighting types; autotransformers for type mercury lamps and sunlamps with specification data; specifications for germicidal lamps; spectral data - ultraviolet and light output.
15. Bulletin IS-102, Flourescent Lamps. May 1946.
Radiation; germicidal lamps; phosphors; lamp types; factors which influence lamp performance; flourescent lamp types; efficiency; ballasts; starters; direct-current operation; instant-start circuits; lamp life and depreciation; lamp difficulties in operation; flourescent lamp developments; black-light lamps; germicidal lamps; flourescent sunlamps; colors and color quality.
16. Reprint of article in "Electrical World", Disinfection with Germicidal Lamps, Control I, Air II, Water III by Matthew Lucklesh. Sept. 29, 1945.
Part I has general history, appraising germicidal energy, ultraviolet sources, controlling germicidal energy, reflection factors; Part II deals with air disinfection, the objectives, energy absorption, disinfecting controlled air, reflected germicidal energy, air in occupied rooms, sterile storage, industrial processes; Part III, disinfection of water and transmission factors, rate of disinfection, conclusions.
17. LD-23-B, The Use of Artificial Light in Horticulture by L. C. Porter. February 1945.
Plants forced by artificial light; plants retarded by artificial light; annuals and perennials; quality and quantity of light; artificial light sources; recommendations; show window lighting; hotbed lighting; miscellaneous applications; growing plants away from windows; plants that do well in the home; measuring light; watts per square foot vs. footcandles; economical lighting; reflectors; operating cost per hour; lamp efficiencies; correct voltage; wiring; cleaning equipment; heat-insulated greenhouses; a sun-porch greenhouse.
18. Reprints of medical research reports, Reprint GS1, Germicidal Radiation. January 1945.
Air contamination and air sterilization; effect of ultraviolet irradiation of air on incidence of infections in an infant's hospital; control of cross infections of the respiratory tract; uses of ultraviolet radiation in reduction of respiratory cross infections.

19. Reprint from "The Magazine of Light", No. 4., IM-21, Levels of Illumination by Walter Sturrock. 1945
Footcandles for seeing; footcandles for selling; present day footcandle values; supplementary lighting; levels of illumination; good present-day practice; table giving levels for all types of tasks.
20. Light for Living, Today and Tomorrow by Helen G. McKinlay and Mary E. Webber. 1945.
Describes in considerable detail the lighting in four postwar homes from the G-E architectural design program; light refreshers for existing homes, utility rooms, dining rooms, bed rooms, living room; check list for choosing portable lamps; General Electric mazda lamp types, watts, applications; information about fluorescent in the home with questions and answers.
21. Folder D, Essential Data for General Lighting Design. May 1944.
General comments; room index; luminaire spacings; layout suggestions; utilization factors; lumen output of lamps; localized and supplementary lighting; projector and reflector lamps; localized desk, bench or counter lighting.
22. "General Electric Review" reprint of Disinfecting Water by Means of Germicidal Lamps by Matthew Luckiesh and L. L. Holladay. April 1944.
General history; transmission factors of water; killing B. Coli in water; rate of disinfection of water; practical considerations and applications.
23. LD-16, Drying Lamps for the Application of Heat with Radiant Energy by Howard Haynes and R. L. Oetting. May 1941.
Describes various lamps and reflectors; discusses the electro-magnetic spectrum and relationship of infrared energy; design of drying lamp installations; various types of dryers are described; water evaporation and mass heating; paint baking; safety precautions; measurement of radiant energy; useful tables and conversion factors.
24. Reprint from "The Magazine of Light", Vol. 16, No.3, featuring the story of Certified Lamps, This is a Certified Lamp.
Contains photographs showing various C.L.M. lamps in various lighting problems; sketches and pictures of lamps produced by a number of manufacturers; discusses history of C.L.M.; summarizes specifications of C.L.M. lamps; discusses styling, lighting service, lamp positioning, testing procedures, visual comfort, construction checks, cord, plug and switches, shade tests, standard reflectors, superior performance.
25. Reprint from "The Magazine of Light", Notes on Lighting Fundamentals.
Lighting terms defined, candlepower, lumen, footcandle, footlambert; checking and specifying lighting, light meter, visibility meter, brightness meter; methods of light control, absorption, diffusion, refraction, reflection, polarization; reflecting materials and their appearance; transmitting materials and their appearance; reflector contours; lenses and prisms; distribution curves; cell distribution photometer.

Manufacturers (Cont'd)

26. See Your Home in a New Light
Contains 22 lighting recipes for better living in a better lighted home; recipes for reading areas and lamps, hand sewing, writing, drawing, piano playing, general room lighting, dining alcove, television, food preparation, kitchen duties, kitchen, facial make-up, bedroom, shaving, laundry, hand and machine ironing, home shop, outdoor lighting, wiring suggestions.
27. Mimeo bulletin, Ultraviolet and Infrared Lamps for Poultry Use by L. C. Porter and G. F. Prideaux.
What is ultraviolet; near, middle and far ultraviolet; infrared; angstrom units; how ultraviolet affects health; sunlamps compared to cod-liver oil; advantages of sunlamps; methods of use; extending the working day; ultraviolet sources; carbon arc; quartz mercury tube; lamp types S-1, S-2, S-4, RS-4, RS, mazda CX lamps; installation of sunlamps; cleaning; battery brooders; cost of operation; growth of chickens and turkeys; egg production; vitamin A; benefits of using ultraviolet; germicidal lamps; baby chick brooders.

State Agriculture Colleges and U. S. Department of Agriculture

Alabama - School of Agriculture, Alabama Polytechnic Institute, Auburn.

1. Experiment Station Bulletin No. 267, Effects of Lighting and Shading on Flowering of Certain Florist Crops Under Southern Conditions by E. W. McElwee. May 1949.
Review of the literature; basis for difference in response in North and South; classification of plants as to response to day-length; controlling day-length artificially; response of some major and minor florist crops to lighting and shading.

Arkansas - College of Agriculture, University of Arkansas, Fayetteville.

1. Extension publication, Yard Lighting.
Issued for 4-H club use; shows angle reflector and shallow dome types; diagram of 3-way switch; installation recommendations; size lamps to use; type of equipment to use; connection and switches; sample report on yardlighting.

Connecticut -

1. See "Wiring" Manufacturers.

Florida - College of Agriculture, University of Florida, Gainesville, Florida.

1. Experiment Station Bulletin 420, Periodic Increase in Lighting Versus Continuous Lighting for Layers by O. K. Moore and N. R. Mehrhof. February 1946.
Light as a physiological stimulus; review of literature; experimental procedure; results and discussion.
2. See "Wiring" for further information.

Idaho - College of Agriculture, University of Idaho, Moscow.

1. Farm Electrification Leaflet No. 7, Electric Light for the Farm by W. H. Knight. September 15, 1949.
Suggestions for branch circuits, wire sizes; outlets per circuit; special circuits; what is good lighting; interior lighting in kitchen, dining room, living room, bedroom, bathroom, laundry, halls and stairways, closets, porches; gives lamp sizes and types to use; yard lighting, how to install and control; fixtures to use and installation for poultry lighting, dairy lighting, hog production, shop lighting; special lighting such as fluorescent, ultraviolet, infrared; safety angles.
2. Rural Electrification Extension Leaflet No. 60, Do You Need a "Hot Spot"? December 1944.
Describes the R-40 infrared lamp; heat lamp lamb brooder; frost and freezing protection; uses for the R-40 lamp; ways the lamp can be mounted; describes portable insulated hog waterer using R-40 lamp; heat lamp chick brooder.
3. See "Wiring" for further information.

Illinois

1. See "Lighting", Laboratories, Manufacturers and "Wiring" Manufacturers.

Indiana - School of Agriculture, Purdue University, Lafayette.

1. Experiment Station Circular No. 206, Plant Forcing with Electric Lights by R. B. Withrow. October 1934.
Past history; equipment suggestions; cultural suggestions; winter forcing and summer forcing; crops which are affected and how; recommends light intensities; crops unfavorable for forcing.
2. Experiment Station Bulletin No. 380, Artificial Radiation as a Means of Forcing Greenhouse Crops by R. B. Withrow and M. W. Richman. April 1933.
Experimental methods and equipment; light intensity; irradiation at various stages of growth; time and duration of lighted period; effect of supplementing daylight with artificial light over a miscellaneous group of plant material.
3. Experiment Station Bulletin No. 366, The Response of Greenhouse Crops to Electric Light Supplementing Daylight by Laurenz Greene, R. B. Withrow and M. W. Richman. December 1932.
Review of past history; experimental results; light intensity; time of lighting; illumination at evening compared with other periods; photoelectric controls; quality and kind of light; sunlight measurement; temperature measurement; lighting equipment used.

Iowa - Iowa State College of Agriculture and Mechanical Arts, Ames.

1. Experiment Station Reprint from "Farm Science Reporter", Light Up the Hen House by J. W. Kelly. October 1942.
Results of 10 - year study at Oklahoma Experiment Station; general rules; benefits from lights; lighting methods.

State Agriculture Colleges and U. S. Department of Agriculture (Cont'd)

Kansas - Kansas State College of Agriculture and Applied Science, Manhattan.

1. Extension Rural Electrification, 3, Poultry House Lighting by H. E. Stover. June 1948.
How lighting increases production; keeping water available at all times; poultry water warmers; schedules for lighting; length of lighting; location of lights and size; wiring plan; energy consumption; homemade equipment.
2. See "Wiring" for further information.

Maine - College of Agriculture, University of Maine, Orono.

1. Extension Service Bulletin No. 268, Lighting the Home With Electricity by Edna M. Cobb. June 1940.
Planning; light-colored walls, ceiling and woodwork; furniture arrangement; position of outlets and switches; sufficient light; eliminating glare; light distribution; is it possible to have too much light; how to know if there is sufficient light; choosing fixtures, overhead lights, wall lights, portable lamps, pin-up lamps, diffusing bowls, shades; placing the lights in living room, kitchen, dining room, bedroom, bathroom, stairs, closets; making over old fixtures and lamps.
2. See "Wiring" for further information.

Massachusetts

1. See "Lighting", Manufacturers.

Michigan

1. See "Lighting", Technical Societies.

Missouri - College of Agriculture, University of Missouri, Columbia.

1. Extension Circular 374, Farm Lighting by K. B. Huff. January 1945.
Importance of good lighting; requirements for good lighting; how to get most light for the money; better sight lamps; portable lamps; home lighting recommendations, fixtures and lamps; remodeling old fixtures; outside lighting; farm building lighting; switches to use; briefly mentions wiring with no specific data.

Nebraska - College of Agriculture, University of Nebraska, Lincoln.

1. Experiment Station Bulletin 344, Sunlight Lamps for Laying Hens by F. E. Mussehl and F. D. Yung. September 1942.
S-1 sunlamp description and economic consideration, results of experiments; S-4 sunlamp economic considerations and experiment results; compares use of lamps with fish oil as to number of eggs produced, culls and deaths, egg weight and hatchability.

New Jersey - State College of Agriculture, Rutgers University, New Brunswick.

1. Reprint, "Milk Plant Monthly", A Possible New Tool for the Industry Sterilization by Radiation by O.F. Garrett and R. B. Arnold. August 1938.
Describes "Sterilamp" used in tests; bactericidal effect on various organisms; treatment of porous surfaces; treatment of utensils and containers; treatment of equipment; preliminary results; references.

State Agriculture Colleges and U. S. Department of Agriculture (Cont'd)

2. See "Lighting", Books, Manufacturers.

New York - New York State College of Agriculture, Cornell University, Ithaca.

1. Experiment Station Memoir 185, Effect of Narrow Ranges of Wave-Lengths of Radiant Energy, and Other Factors, on the Reproductive Growth of Long and Short-Day Plants by N. A. Schappelle. January 1936.
Review of history; experimental procedure; relation of temperature and mineral nutrition to length of day, in its effect on reproductive growth of long day plants; effect of blue and red light on short day plants.
2. See "Lighting", Books, Laboratories, Technical Societies.
3. See "Wiring", Manufacturers, Associations.

North Carolina

1. See "Wiring" for further information.

Ohio - College of Agriculture, Ohio State University, Columbus.

1. Experiment Station reprint from bimonthly bulletin Vol. XXV, No. 207, A Comparison of S-4 Type Sun Lamps and Cod-Liver Oil as a Source of Vitamin D for Poultry by D. C. Kennard and V. D. Chamberlin. Nov.-Dec. 1940.
Sources of vitamin D; growth of chickens; growth of turkeys; egg production and hatchability; comparison of costs for chickens and turkeys; the vitamin A problem.
2. Extension Service Bulletin 192, Lighting the Farm Home by Anne Biebricher and I. P. Blauser. June 1940
Essentials for good lighting; need for adequate light; guides for measuring light; amount of light for various activities; effective distribution; selecting and placing fixtures as ceiling fixtures for general activities in hall, living room, dining room, bedroom, bathroom, closet, kitchen, laundry, cellar, yard; wall brackets for kitchen, bathroom, bedroom, hall, living room, dining room; portable lamps for special uses; shades for lamps; diffusing bowls; lamps giving different intensities of light; meaning of I.E.S.; placing lamps to avoid glare and shadows; ABC's of better lighting; modern light from older fixtures; wiring requirements for the home, safety, adequacy, convenience, economy; types of wiring used.
3. Experiment Station Bulletin 559, The Use of Artificial Light and Reduction of the Daylight Period for Flowering Plants in the Greenhouse by G. H. Poesch and Alex Laurie. November 1935.
Use of black cloth to reduce daylight; length of applying shade; succession cropping; types of cloth; additional light; double use of cloth; use of tobacco cloth; neon mazda and mercury light; intensity and date of application; efficiency of lamps; time of day of lighting; frosted versus clear glass lamps; additional light for pot plants; recommendations for additional light in the greenhouse; lighting details and costs; reflectors; light for house plants; various size of greenhouses.

State Agriculture Colleges and U. S. Department of Agriculture (Cont'd)

4. Experiment Station Bulletin 476, All-night Light for Layers by D. C. Kennard and V. D. Chamberlin. May 1931.
Brief history; effect on winter egg production, feed consumption and body weight; hens versus pullets; prevention or recovery from fall or winter molt by all-night lights; hatchability effects; premolting and reconditioning hens for winter egg production; installation of lighting; location; kind of light; when to use light; factors contributing to successful use of all-night lights.
5. See "Lighting", Manufacturers.
6. See "Wiring", for further information.

Oregon - Oregon State College, Corvallis.

1. Extension Service Bulletin 531, Better Farm and Home Lighting by Joan Patterson, F. E. Price and E. H. Davis. September 1939.
Fundamentals to be considered; importance of color; reflection factors of walls and ceilings; sizes and shapes of lamp bulbs; Mazda daylight bulbs; proper voltage of bulbs; types of lamp bulbs; selecting and placing light fixtures for general illumination, for various rooms, entrance, hallway, living room, dining room, bedroom, play room, closets, kitchen, bathroom, laundry, cellar; how to choose right lamp and shade; other recommendations for special tasks; making over old fixtures into new ones; light for farm buildings as garage, yard light, portable flood light, dairy barn, general purpose barn, haymow, milk house, poultry house, sheep barn, cattle barn, hog house, shop, machine shed, granary and feed room, silo and chute, storage cellar, wood shed.

Pennsylvania - School of Agriculture, The Pennsylvania State College,
State College.

1. Experiment Station Bulletin 486, Response of Turkeys to Artificial Illumination by P. H. Margolf, J. A. Harper and E. W. Callenbach. May 1947.
Review of research, experimental procedure; equipment and housing; trapnesting and pedigreeing; histological technique; effect of age and light on ova and sperm production; relation of time of laying to time of mating of females and influence of light on this and fertility and hatchability; effect of light intensity on reproductive response; general discussion; recommendations.
2. Reprint from "Journal of Economic Entomology" of Experiment Station Paper No. 1235, The Effects of Infrared Radiation on Certain Insects by S. W. Frost, L. E. Dills and J. E. Nicholas. August 7, 1944.
Review of history; methods used; types of lamps used; types of filters used; exposure times; percent killed; internal temperature of mealworms at lethal exposures.
3. Extension Service Circular 266, Better Lighting for the Home by F. Edith Morton. August 1944.
Amount of light; glare; contrast; arrangement of lamps; selecting lamps such as place to be used, height, shade size and shape, shade color, texture of shade, bulbs, base; care of lighting equipment; kerosene and gasoline lamps; remodeling lamps; lamp base adapters; use of silvered bowl bulb.

State Agriculture Colleges and U. S. Department of Agriculture (Cont'd)

4. Experiment Station Bulletin 461, Influence of Light on Age at Sexual Maturity and Ovulation Rate of Pullets by E. W. Callenbach, J. E. Nicholas and R. R. Murphy. January 1944.
Review of history; procedures; growth; feed consumption; mortality; reproductive performance; practical applications.
5. Experiment Station Bulletin 462, Light Intensity as a Factor in the Artificial Illumination of Pullets by J. E. Nicholas, E. W. Callenbach and R. R. Murphy. January 1944.
Review of history; experimental procedures; lighting conditions; biological response; mortality; practical applications.
6. Experiment Station Bulletin 455, Effect of Light and Availability of Feed on Egg Production by E. W. Callenbach, J. E. Nicholas and R. R. Murphy. September 1943.
Review of literature; experimental procedure; egg production results; mortality; egg weight and feed consumption; bibliography;
7. See "Lighting", Magazines.
8. See "Wiring", Manufacturers.

Pennsylvania - Philadelphia College of Pharmacy and Science, Philadelphia.

1. Reprint from "The American Journal of Pharmacy" Vol. 114, No. 1, Ultraviolet Light as a Sanitary Aid by Dr. Louis Gershenfeld. Jan. 1942.
History of development; forms of radiant energy; ultraviolet light; transmission and generation of ultraviolet light; ultraviolet lamps; sanitization; factors concerned in effective radiation; application; scientist's aerial warfare; practical air sanitation; sanitation in food and beverage industries; drinking and eating utensils; other applications.

United States Department of Agriculture - Washington 25, D. C.

1. BPISAE Bulletin, Plant Propagation Under Fluorescent Lamps by V.T. Stoutemyer and A. W. Close. March 1946.
Equipment needed; rooting of cuttings; seed germination; transplanting.
2. U. S. Department of Agriculture Miscellaneous Publication 580, Color Measurement and its Application to the Grading of Agricultural Products by Dorothy Nickerson. March 1946.
Content consists of color grading problems, color charts in grading work, transparent color standards in grading work, standards need measuring, methods of expressing results of color measurement, disc colorimetry and application to grading problems, applications of Munsell notations in related problems, the Kelly mash method for color matching, standard names for colors, ASA standard for the specification and description of color, color-tolerance specifications, artificial daylighting for grading work, color-vision testing, literature cited.

State Agriculture Colleges and U. S. Department of Agriculture (Cont'd)

3. Reprint from "The Botanical Gazette", A Chamber for Growing Plants Under Controlled Conditions by K. C. Hamner. June 1944.
Describes a chamber using fluorescent lamps for maintaining control of lighting conditions in studying the growth of plants.
4. Miscellaneous Publication No. 507, Day Length and Crop Yields by M. W. Parker and H. A. Borthwick. September 1942.
Review of history; photoperiod; controlling length of photoperiod; selection of varieties for specific photoperiods; selection of localities with suitable photoperiods; photoperiod an aid in plant breeding.
5. Farmers Bulletin No. 1838, Electric Light for the Farmstead.
Contents include, the importance of good lighting; essentials of good lighting; wiring for good lighting; light for the farmhouse; remodeling old lighting installations and equipment; yard lighting; lighting the farm buildings; planning lighting for farm buildings. This bulletin is being revised. Requests will be held and filled when new bulletin is available.

Virginia - Virginia Polytechnic Institute, Blacksburg.

1. Extension Service VFEC-6, Live With Light. November 1950.
What is good lighting; lighting fixtures; portable lamps; built-in units; entrance lighting; where safety counts; lighting for more enjoyment; selection of lamps for living room; light for relaxing; bathroom lighting; time savers; dining room lighting; kitchen lighting; cellar stairs; laundry; outdoor lighting; good desk lighting; guide in selecting lamps.
2. Extension Division, A.E. 141, Poultry Lighting. October 1941.
Lighting systems used; installation of lighting system; time switches; homemade switch using alarm clock.
3. See "Wiring" for further information.

Washington - College of Agriculture, State College of Washington, Pullman.

1. Experiment Station Bulletin No. 471, Poultry Lighting for Egg Production by J. B. Dobie, J. S. Carver and June Roberts. Jan. 1946.
Brief history and review of literature; purpose of experiments; equipment and housing procedures used; results and discussion; effect of hours of light per day on egg production; effect of light intensity; effect of kind of light; effect of time of additional light; effect of time of lighting period.
2. Experiment Station Mimeo publication, Electric Light for Egg Production by June Roberts and J. S. Carver. June 1941.
Review of history; equipment used; procedure; definition of terms; results; effect of hours of light on egg production; effect of light intensity on egg production; effect of kind of light on egg production.

West Virginia

1. See "Wiring", Manufacturers.

Wisconsin

1. See "Lighting", Books.
2. See "Wiring" for further information.

Technical Societies

Michigan - American Society of Agricultural Engineers, St. Joseph.

1. Committee report of paper on The Use of Ultraviolet Light for Sterilizing by Drs. F. R. Smith and Harry Stierli, University of California. June 1941. Reports on germicidal lamps for hydro-cooler water; control of mold in condenser water; cheese and meat storage; mold in greenhouses; insect traps; killing bacteria; general uses; lamps that attract fewest number of insects; black light; purple X lamp.

New York - The Electrochemical Society, Inc., Columbia University, New York.

1. Reprint 78-27, The Sterilamp, Its Electrical and Radiation Characteristics by D. D. Knowles and E. Reiter. October 7, 1940. Brief review of past history; destruction of bacteria by heat, chemicals, gases, radiations; description of sterilamp and its characteristics with tables and charts; applications to eating and drinking utensils, hospitals, bakeries and refrigerators, air-conditioning, meat processing.

New York - American Institute of Electrical Engineers, 33 W. 39th. St., New York.

1. Reprint from "Electrical Engineering", Sterilization by Ultraviolet Radiations by S. G. Hibben and P. W. Blackburn. Nov. 1938. Explains the electromagnetic spectrum and defines terminology: divides ultraviolet radiation into four categories; describes the "Sterilamp"; table showing characteristics of some commercial ultraviolet radiations; production of ozone a problem; use around food products, amount of radiation recommended; length of time of radiation; controlling amount of radiation; amount needed to destroy various organisms; results of tests on drinking glasses; use in small walk-in cooler.

New York - American Society of Refrigerating Engineers, 40 West 40th. Street, New York 18.

1. Reprint of paper, New Developments in the Use of Ultra-Violet Light in Food Storage by A. W. Ewell. January 1939. Time and intensity relationships; use of ozone; disadvantages of high concentrations of ozone; use of the "Sterilamp"; results in commercial storage.

New York - American Society of Heating and Ventilating Engineers, 51 Madison Ave., New York 10.

1. Reprint from "Heating, Piping and Air Conditioning", Determining and Reducing the Concentration of Air-Borne Micro-Organisms by Matthew Luckiesh and A. H. Taylor. Jan. 1947. Explains radiation types; sources and types of bacteria; collecting air-borne micro-organisms; growth and sampling procedure; results of germicidal installations; references.

Technical Societies (Cont'd)

2. Reprint from "Heating, Piping and Air Conditioning", Principles of Ultraviolet Disinfection of Enclosed Spaces by L. J. Buttolph. May 1945. Time rate of collecting bacteria by humans through nose and throat; summer air and ventilation; school ventilation; sanitary ventilation for high occupancy, low occupancy; ultraviolet air disinfection in ducts; practical duct calculations; room air disinfection; upper-air irradiation; air interchange factors; fixture efficiency; effective output, depreciation and ceiling absorption factors; upper and lower air calculation; graphic fixture appraisal; epidemiologic and clinical factors.
3. Reprint from "Heating, Piping and Air Conditioning", Advantages of Bactericidal Ultraviolet Radiation in Air Conditioning Systems by H. C. Rentschler and Rudolph Nagy. January 1940. Ways of applying radiation; method of measuring radiation; factors controlling destruction of bacteria; lamps and characteristics; lamps in ducts; installation tests; conclusions; references.

New York - Illuminating Engineering Society, 51 Madison Ave., New York 10,

1. "Illuminating Engineering", Vol. XLVI, No. 1, Flourescent Lighting in the Home - Part II by E. W. Commery and Kaye A. Leighton. January 1951. Over-window valance lighting, methods and lighting effects in various rooms; flourescent lamp wall bracket; cove lighting; ceiling cornices; alcoves and soffits; louver ceilings; designers' flourescent lamp chart.
2. "Illuminating Engineering", Vol. XLV, No. 12, Flourescent Lighting in the Home - Part I by E. W. Commery and Kaye A. Leighton. December 1950. Review of past history and developments; Color rendition studies; appearance of colors when viewed under two types of illuminants; appearance changes of colors when viewed simultaneously under three different illuminants; color rendition under "Deluxe", "Standard" cool white and "Deluxe", "Standard" warm flourescent white lamps; specification changes of surface colors under three illuminants; definition of terms used in descriptive naming of colors.
3. Reprint from "Illuminating Engineering", Vol. XLIV, No. 5, Studies of Lighting and Seeing for the Student at Home by Mary E. Webber. May 1949. Analyzes the lighting results from twenty representative luminaires that are popularly advocated for home study. Comparative test data and comments are presented to show inadequacies often overlooked as well as good qualities which contribute to adequate lighting. Suggest patterns for evaluation of luminaires' ability to supply most favorable lighting.
4. "Illuminating Engineering", Vol. XLIV, No. 2, Designing Portable Lamps for Lighting Effectiveness by E. W. Commery. February 1949. The present and the past; portable lamp qualities and values; illumination level objectives; test planes and their locations; opaque and diffuse reflection; visualizing design from the test plane; observations of visual discomfort when lighting and viewing magazines at various angles; laboratory aids.

Technical Societies (Cont'd)

5. Reprint from "Illuminating Engineering", Vol. XLIII, No. 9, An Appraisal of Kitchen Lighting Elements by Jan Reynolds and A. W. Kakilty. November 1948.
General illumination; test kitchen; test procedure; fixtures used, type, light source, position of fixture and results; sink and under the cabinet lighting, test area and procedure; sink and cabinet lighting results; under cabinet lighting results.
6. Reprint from "Illuminating Engineering", Vol. XLII, No. 10, An Evaluation of Methods and Fixtures used for Bathroom Mirror Lighting by Myrtle Fahsbender and Beryle Priest. December 1947
Test room; test procedure; test photographing; results of various types luminaires, brightness, footcandles, location of luminaires; data and comments on general illumination observations and tests.
7. "Recommended Practice of Office Lighting" July 1947.
Office tasks; contrasts; influence of lighting on seeing; quantity of illumination; reflected glare; distribution, diffusion, shadows; influence of environmental factors, desk finishes, room finishes, reflectance values, color; lighting systems, factors and utilization of natural light, dirt on windows, value of windows; artificial lighting systems, types of systems; lighting and seeing in specific areas such as private offices, general offices, drafting rooms, files, mail rooms, conference and board rooms, reception rooms, corridors and hallways, stairways and personal service; other considerations such as supplementary lighting, office machine finishes, maintenance; brightness and brightness ratios; definitions; references.
8. Reprint from "Illuminating Engineering", Vol. XLI, No. 7, Lighting Performance Recommendations for Portable and Installed Residence Luminaires. July 1946.
Purpose; scope; sources of basic technical data; definitions and testing procedures; illumination; shielding and brightness; distribution; efficiency; illumination values for the home and list values for specific visual tasks; positioning of luminaires for various visual tasks; projected area tables for luminaires below 68 in. from floor and for luminaires above 68 in. from floor; brightness nomograph.
9. Reprint from "Illuminating Engineering", Recommended Practice of Home Lighting. June 1945.
The objectives of good lighting; table of illumination values for the home; quantity of light; quality of lighting; light distribution; light controlling material; effect on room colors of filament and fluorescent sources; lighting recommendations for the major rooms of the home, entrance halls and closets, living room, dining room, kitchen, laundry, garage, bedroom, bathroom: floor, table and wall lamps regarding inner diffusing bowls, lamp shades, placement; adequate wiring; contains many illustrations.

Technical Societies (Cont'd)

10. Reprint of paper, Bactericidal Ultraviolet Radiation and Its Uses by H. C. Rentschler. September 1940.
Explains radiation; experimental results; air-borne bacteria; radiation generators; detection and measurement of ozone; practical uses of ultraviolet; meat preservation; domestic refrigerators; bakeries, nurseries; drinking glasses; dairy barns; poultry houses; irradiation of liquids; references.
11. Reprint from "Illuminating Engineering" No. 20, Studies of the Visual and Lighting Problems of Television in the Home by E. W. Commery.
The influence of theatre and motion pictures; television picture formation; picture size; evaluating picture tone range; viewing filters; viewing lenses; surroundings for viewing motion and television pictures; lighting principles.
12. Reprint from "Illuminating Engineering", No. 19, Lighting and Seeing Conditions for Hand Sewing in the Home by Myrtle Fahsbender and Priscilla Presbrey.
A study of lighting conditions most desirable for hand sewing in the home and the types of available equipment which will most nearly provide these conditions. Sixteen luminaires are appraised on the basis of their ability to produce satisfactory lighting for hand sewing.
13. Reprint from "Illuminating Engineering", No. 17, Lighting for the Piano in the Home by E. W. Commery and Mary E. Webber.
Illumination requirements and recommendations for piano scores; test plane area, location and procedures; lighting performance of typical luminaires, conventional floor and table lamps; rack attached luminaires; effect of placement on illumination; performance data; ceiling spotlights; suggestions for further development.
14. Reprint from "Illuminating Engineering", No. 16, Laundry Lighting Requirements by A. W. Kakilty.
Test area; general lighting; working centers; illumination required; color of light; recommendations.
15. Reprint from "Illuminating Engineering", No. 13, Lighting for the Home Sewing Machine by Myrtle Fahsbender and Priscilla Presbrey.
The visual task and the lighting problems; test procedure, selection of test plane, measurements; equipment tested, machine lights, supplementary equipment; quality and quantity of illumination; performance of test luminaires; use of machine lights; attachments; fluorescent lamps; placement of luminaires.
16. I. E. S. Bulletin, Contemporary Lighting in Modern and Traditional Interiors.
Presents photographs and construction details of new ideas in use of light and color in the home; how light can be used for utility and decoration; lighting data for each installation are included; chapters are, Lighting-Its Role in Decoration, Cove Lighting, Recessed Lighting, Window Lighting, Wall Lighting, Ceiling Fixtures and Wall Brackets, Portable Lamps, Lamps for Decoration Accent, Use of Fluorescent Tubes, Guide to Interior Design Characteristics and Motifs, Glossary of Terms. Price \$1.00

Technical Societies (Cont'd)

17. American Standard Practice for School Lighting. September 20, 1948. Contents are: 1. Purpose, Definition of Good Illumination and Scope, 2. General Conditions for School Tasks, Quality and Quantity of Illumination and Environment, 3. Natural Lighting and Controls, 4. Artificial Lighting for General Lighting Systems, Chalkboards and Special Lighting Requirements, 5. The Economic Factors of School Lighting, Cost Analysis and Maintenance. Also Glare and Brightness Ratios; Illumination Level and Brightness; Importance of Cost; Design Guide -- Footcandles Delivered by Typical General Lighting Installation; Wiring; Explanation of Technical Terms. Price Fifty cents.
18. I. E. S. Lighting Handbook, First Edition, 1947. Contains the following chapters: 1. The Physics of Light Production, 2. Light and Vision, 3. Standards, Nomenclature, Abbreviations, 4. Color, 5. Measurement of Light, 6. Light Sources, 7. Light Control, 8. Light Calculations, 9. Daylighting, 10. Interior Lighting, 11. Exterior Lighting, 12. Sports Lighting, 13. Transportation Lighting, 14. Photographic, Reproduction, Projection and Television Lighting, 15. Miniature Lamp Applications, 16. Miscellaneous Applications of Radiant Energy. Also manufacturers' data. This publication is being revised.

PART II - WIRING

Associations

Minnesota - Minnesota Electrical Council, 234 Foshay Tower, Minneapolis 2.

1. Minnesota Farmstead Wiring Regulations. Effective December 1, 1940. These regulations have been compiled from the National Electrical Code covering average conditions for adequate and safe wiring in order to provide a uniform set of regulations to govern farmstead wiring in this state.

New York - Industry Committee on Interior Wiring Design, 420 Lexington Ave., New York.

1. "Handbook of Farmstead Wiring Design". 1946. Planning wiring system; definitions and symbols used; branch circuit recommendations; other circuits; feeder circuits; gives lighting outlets, convenience outlets, special purpose outlets and others for dairy barn, loafing barn, box stalls and pens, milking area, milk house; poultry laying house, (lighting for production), brooder houses (portable or colony), egg rooms, poultry dressing rooms, beef cattle barn, horse stables, sheep barn, hog house, tobacco barn, sweet potato house, potato storage, fruit and vegetable storage and grading rooms, greenhouse, roadside stand, farm shops, machinery shed, stairways, farm pump, farm residence; discusses service equipment; planning exterior distribution system; definitions, pole metering, outdoor metering, tables and data on demand, wire sizes, and voltage drop.
2. Handbook Of Residential Wiring Design. Recommendations for placement, number and type and size of outlets and circuits for the home also service entrance, telephone, radio and television circuits. Summarizes in tabular form all the requirements.

Books

New York - John Wiley & Sons, New York.

1. Electricity in the Home and on the Farm by Forrest B. Wright. Third Edition. 1950. Pps. 9-45, 55, 82-140. Includes chapters on, The Nature of Electricity, Electric Circuits, Electrical Terms and Measurement, Electrical Effects, Alternating Current, Power Generating, Transmission and Distribution Systems for Alternating Current, Wiring Systems for the Farm and for the Home, Planning a Wiring System. Also other chapters on the principles of electricity.
2. See "Lighting", Books for further information.

Government Agencies

Tennessee - Tennessee Valley Authority, Knoxville.

1. Farm Wiring Needs. September 1945. A brief description of how to plan farm and home wiring with several illustrations of several applications. Discusses the entrance switch, its size and load to be served. Includes a sample request form for wiring estimate and partial list of equipment used on the farm and in the home.

Government Agencies (Cont'd)

Washington - Department of Labor and Industries, Division of Safety,
Electrical Science Division, Olympia.

1. State Dept. of Labor and Industries bulletin, "Rules and Regulations for the Installation of Heating Cable for Radiant Heated Buildings, Soil Heating and Miscellaneous Applications." 1946.
Maximum wattage and temperature of element; insulation required; terminals and leads; typical installation details; use in plaster; imbedded in concrete floors; terrazzo, tile and other floors; linoleum, asphalt tile and similar coverings; existing ceilings, gypsum board, combustible material; thermal insulation; elements in tanks, troughs or pipe lines; element in soil or sand; imbedded in driveways.

Manufacturers

Connecticut - General Electric Company, Bridgeport.

1. Farm Wiring Guide. 1945.
Definition of electrical terms; farm distribution system; service entrance; electricity in farm production; electricity in dairy barn, machine shed and workshop, poultry house, hoghouse, sheep shed, granary, corn crib, farm yard; electricity in the home, living room, dining room, kitchen, laundry, halls, entrances, stairways, porches, bedrooms, bath, attic, cellar; wiring materials; make your own layouts; lighting recommendations.

Illinois - Sears, Roebuck and Company, Chicago.

1. Bulletin F 5428, Electric Wiring For Home or Farm. June 2, 1947.
Planned wiring for the home and farm; the old way and the modern way; providing for future loads; adequate wiring; service entrance; branch circuits; recommended wire sizes; definitions of electrical terms; simplified instructions for a safe and sound installation; tools needed; basic wiring system simplified; meter reading; cutting, splicing and connecting wire; provide adequate service entrance; service entrance cable; steel conduit; grounding the service entrance; indoor wiring; armored cable; sheathed cable; knob and tube; thin wall conduit; wiring diagrams for common switch and outlet combinations; installation methods for old and new buildings; installing extra convenience outlets in old work; installing wall switches in old and new work; installing door bells and chimes; providing for large motors; wiring from yardpole to house, barn and outbuildings; dairy barn and milkhouse wiring; poultry house wiring; two-wire service to outbuildings; overhead wiring; underground wiring; basic wiring devices and how they are used.

New York - The National Adequate Wiring Bureau, 155 E. 44th. St., New York 17.

1. Getting the Most from Your Home's Electric System. 1951.
Discusses the general wiring system and service entrance; branch circuits; fuses and circuit breakers; how many and how to avoid overloaded circuits; switch controls; types of outlets; rules for locating outlets and switches; check list for living room, halls, stairways, bedrooms, bathrooms, kitchen, laundry-utility room, outdoors, garage and other locations, specifying service entrance and branch circuits, getting help from the experts.

Manufacturers (Cont'd)

Ohio - Porcelain Products Inc., Findlay.

1. Installation Manual and Data Book on Porcelain Protected Wiring Systems. 1942.

Why choose porcelain; what is a porcelain protected wiring system; where to use; safety of system; cost; installation; 1940 code requirements and common construction details; knobs and cleats; corners; supports; loom; tubes; vertical runs; separation from metal; wet locations; mechanical injury; attics; types of boxes; cable wiring; covered neutral wiring; mounting porcelain outlet boxes; switch boxes; metal fixtures; surfolet wiring; current carrying capacity for various types of systems.

Ohio - General Electric Company, Nela Park, Cleveland.

1. See "Lighting" for further information.

Pennsylvania - Westinghouse Electric Corp., 306 4th. Ave., Pittsburgh.

1. B-3510-B, Home Wiring Handbook. 1951.
Chapters on Electrical Equipment for the Home; Four Degrees of Electrical Living; Electrical Outlets; Electrical Circuits; Electrical Control-Centers, Feeders and Service Entrance; Conductors-Voltage Drop-Circuit Protection; Communication Systems; Suggested Specification for Single-Family Dwellings; Estimating Electrical Costs; Building Design and Construction Terms; Miscellaneous Charts and Tables; Dimensional and other Data on Products.
2. "Electrical Ideas for Better Farming" July 1948.
A very general publication giving many applications with parts on wiring and lighting which include: repair of cords and plugs; simple rules for care of all appliances; hints for better lighting; planning ahead for electrical needs; wiring materials and methods including, non-metallic sheathed cable, armored cable, rigid metal conduit, electrical metal tubing, surface metal raceway, open wiring on insulators, knob and tube work.
3. Bulletin B-3874, Farmstead Wiring. January 1947.
Value of electricity; looking ahead; farm lighting; productive uses; 10-year plan; interior wiring; exterior wiring; distribution transformers; distribution systems; explanation of terms; current-carrying capacity of wires; voltage drop and effect on motors, heating and lighting; voltage drop charts; interior wiring and general provisions, locating outlets, farm building and house circuits, branch and feeder circuit protection, wiring materials and methods; exterior distribution system for general provisions, utility service and metering, planning system, yard lighting, materials and methods.

State Agriculture Colleges and U. S. Department of Agriculture

Arkansas -

1. See "Lighting" for further information.

Colorado - Colorado Agricultural and Mechanical College, Fort Collins.

1. Extension Bulletin 397-A, Wiring the Farmstead for Efficiency by O. J. Trenary. May 1947.
Discusses wire types; cables; definitions; distribution of electricity; outlet types and suggested locations; fuses and circuit breakers; cost of operation of equipment; farm and home wiring suggestions.

State Agriculture Colleges and U. S. Department of Agriculture (Cont'd)

Florida - College of Agriculture, University of Florida, Gainesville.

1. Extension Circular 93, Planning Farm Wiring by A. M. Pettis. May 1950.
General discussion; rules to follow; three-wire service; convenience outlets; good lighting.

Idaho - College of Agriculture, University of Idaho, Moscow.

1. Farm Electrification Leaflet No. 6, Adequate Farmstead Wiring. May 1, 1949.
Farmstead yard pole diagram; adequate farmstead wiring plan shows buildings, size of circuits, approximate connected load of each; how to plan wiring; wire size table based on 2% voltage drop; yard light; brief paragraph on interior wiring; safety tips.
2. Rural Electrification Extension Leaflet No. 75, Wiring Today for Tomorrow's Needs, March 1946.
A brief general discussion of planning new wiring or rewiring jobs; safety and adequacy; diagram showing yard pole and entrance panel with the various circuits described.
3. Rural Electrification Extension Leaflet No. 64, Wiring the Farmstead by Hobart Beresford. April 1945.
A brief general discussion of farm wiring; circuits needed; yardlighting; common wiring symbols; yardpole and circuit layout.
4. Rural Electrification Extension Leaflet No. 63, Are You Planning Today for your Home Tomorrow. March 1945.
General and brief discussion of farm home wiring; suggested layout for location of outlets and switches.
5. See "Lighting" for further information.

Kansas - Kansas State College of Agriculture and Applied Science, Manhattan.

1. Engineering Extension Rural Electrification No. 2, Planning the Wiring System by Harold E. Stover. November 1, 1946.
Basic requirements of wiring system; safe wiring; adequate wiring; economical wiring; convenient wiring; overloading wiring and results; service equipment and size for farm home and farm buildings; wiring recommendations for farm buildings; probable load for farm buildings; voltage drop results and charts; full load motor current ratings.
2. Extension Service Bulletin 63, Revised, Wiring the Farmstead by F. C. Fenton, H. E. Stover and E. H. Smith. January 1946.
The wiring problem; planning for the future; farm wiring differs from city wiring; outlets located for work; individual power plants; central station service; wiring should be done by electrical contractor; use only approved materials; size of transformer; location of transformer; location of meter; types of entrance wiring; main entrance switch; distribution panel; over-current protective devices; devices used in place of fuses; grounding; wiring farm buildings for convenience outlets, convenience outlets for the home, in the kitchen, dining room, living room, bedroom, bathroom, laundry,

2. (Continued)

other farm buildings as the shop, garage, granary, barn, dairy, poultry house; power outlets in the home for water heater, range and special outlets; power outlets about the farmstead; yard lighting; types of wiring such as knob and tube, armored cable, non-metallic sheathed cable, rigid conduit, electrical metallic tubing, flexible steel conduit, metal molding, rubber molding, plug-in-strip, splices and joints; lights controlled from more than one point; wire size ; farmstead uses giving wattage and kwh per month; data on single-phase 60 cycle motors; voltage drop charts; current carrying capacities of wires; conduit size for rubber-covered wires; definitions and terms.

3. See "Lighting" for further information.

Maine - College of Agriculture, University of Maine, Orono.

1. Extension Bulletin 351, Kilowatts, Motors and Farm Electric Jobs by Edward W. Foss. January 1947.

What is electricity; static electricity; electric current; dry-cell battery; voltage; kind of current; how current is measured; generation and distribution of electricity; water power; high tension lines; substations; transformers; how electricity is sold; rates; volts, watts and amperes; why wires get hot; Underwriters' Laboratories; fuses; wire sizes; materials for wiring; heating elements; resistance ; insulators; light; fluorescent lamps; magnetism; motors; how generators work; what does a transformer do; high and low voltage; transformer cooling and protection; purpose of wiring system; grounding; wire color code; service entrance; circuit breakers; what to include in farm wiring; safe wiring; choosing the proper motor; speed and pulley sizes; glossary of terms.

Missouri

1. See "Lighting" for further information.

New Jersey

1. See "Lighting" Manufacturers.

New York - New York State College of Agriculture, Cornell University, Ithaca.

1. Mimeo Bulletin #306, Better Farm Electric Wiring by C. N. Turner. Discusses main service entrance, possible size needed; residence service entrance, possible size needed; actual size of wires without insulation; dairy barn wiring; poultry house service entrance and wiring; yard light; wiring devices; feeder wire size tables; branch circuit wire size tables 115 and 230 volts; wire size chart for single phase motor circuits on 2 percent voltage drop.

2. See "Lighting" Technical Societies, Laboratories, Books.

North Carolina - College of Agriculture, University of North Carolina, Raleigh.

1. Extension Folder No. 66, More Facts About Wiring. June 1946. Generally and briefly discusses service entrance; branch circuits; convenience outlets; ceiling lights; outside wiring.

State Agriculture Colleges and U. S. Department of Agriculture (Cont'd)

2. Extension Service Circular No. 213, Wiring and Lighting the Farm Home by D. E. Jones and Pauline E. Gordon. March 1937.
Service entrance; fuses; circuit breakers; branch circuits; wiring materials as armored cable, non-metallic sheathed cable, knob and tube, conduit; guides in planning wiring for living room, dining room, kitchen, bedroom, bathroom, closets, halls and stairways, outside lighting, yard light, other buildings; contracting the job and cost of wiring; wiring analysis sheet; meter reading; calculation monthly bill; electrical terms; farm home lighting and types of fixtures suitable for living room, dining room, kitchen, bedroom, bathroom, halls and porches; daylight in the home.

Ohio

1. See "Lighting" Manufacturers.

Pennsylvania - School of Agriculture, The Pennsylvania State College, State College.

1. Extension Circular 215, Electric Wiring for The Farm by J. R. Haswell and V. S. Peterson. Rev. April 1941.
Defines a few common electrical terms; explains how electricity is distributed from high line to farm; wire sizes for motors; service entrance and branch circuits; types of outlets and location; plug-in molding; light outlets; general lighting recommendations; light reflection and wall colors; convenience outlets; wiring materials; briefly discusses old systems; schedule of outlets and switches showing which are recommended, optional or decorative only.
2. Miscellaneous Publication No. 1, Manual of Demonstration and Lessons in Teaching Farm Wiring by D. C. Sprague and J. B. Stere.
Describes and explains the use of a standardized demonstration kit for showing the measurement of common electrical units, the operation of various circuits, the function of fuses, voltage drop and power loss and how it affects lighting, heating and power equipment, the importance of adequate wiring and selection of correct wire size. Describes a procedure for planning a farmstead wiring layout and farm building wiring system.

Tennessee - College of Agriculture, University of Tennessee, Knoxville.

1. Extension Publication No. 318, Plan for Electricity. January 1951.
Planning for today and tomorrow; house service entrance and meter; farmstead service entrance and meter; circuits; outlets; locating outlets; floor plan for electric circuits; outlets and lighting for the kitchen, dining room, living room, bedrooms, closets, laundry, bathroom, porches, halls, stairways, dairy barn, general purpose barn, farm shop, machinery shed, hen house, brooder house, yard lights; recommended types of fixtures, voltage drop, probable load tables; circuit wire sizes for single phase motors.

United States Department of Agriculture

1. See "Lighting" for further information.

State Agriculture Colleges and U. S. Department of Agriculture (Cont'd)

Virginia - Virginia Polytechnic Institute, Blacksburg.

1. Extension VFEC-1, Wire Your Farm for Dollars and Sense . January 1946. Planning investment wisely; service entrance; feeder lines; building service entrance; branch circuits; indoor feeder circuits; wiring the house - lighting and other outlets; yardlights; wiring general purpose and other buildings; poultry lighting and wiring; dairy wiring; wiring estimate sheet; pointers on selecting lighting equipment.

Wisconsin - College of Agriculture, University of Wisconsin, Madison.

1. Special Circular, Wiring the Farmstead for Electricity by S. A. Witzell. Rev. March 1945.
Defines a few common terms; explains rate schedule and how power is purchased; uses of electricity that frequently result in profit; explains service wires and voltages; common symbols; adequate wiring; motors, wattage and wire sizes; farm application energy requirements, special reference to milking machine and milk cooler; household appliance energy requirements; suggested specifications for wiring; schedule of residence and farm building outlets; uniform wiring plan; suggested types of fixtures; farmstead wiring layout for adequate service.
2. Exp. Sta. Engr. Reprint No. 46, An Improved Non-Metallic Sheathed Wiring Installation for Rural Buildings by V. M. Murray and L. C. Larson. Bringing conductors into buildings; requirements for good rural building wiring system; rigid conduit; armored cable (BX); Knob and Tube; completely non-metallic sheathed installation with several photographs showing methods used; outlets, grounding and costs.
3. See "Lighting" Books.

Technical Societies

New York - American Institute of Electrical Engineers, 33 W. 39th St., New York.

1. Wiring Equipment Methods for Hazardous Locations by R. P. Northup and C. H. Bissell. Crouse-Hinds Co. Syracuse, N. Y. Feb. 1950.
Explains National Electrical Code requirements with special emphasis on explosive proof fitting. Discusses maintenance procedures, exposure to corrosive materials, anticipated useful life and cost of installation.

